



City of Roanoke

Roanoke Civic Center /Retrofit

- **Description:**
 - Hired a HVAC team of skilled professionals to staff the City's energy management team to perform all retrofit activities and building maintenance in-house, allowing for a comprehensive understanding of the energy performance for all of the buildings in the City's portfolio.
 - Replaced magnetic ballasts with high efficiency electronic ballasts and T-12 bulbs with T-8 bulbs and divided the lighting area into zones to allow for tighter control of the lighting systems.
 - Replaced existing doors with high efficiency doors in the coliseum, exhibit hall, and performing arts theater.
 - Installed a magnetic bearing chiller which is low maintenance, environmentally friendly, cost-efficient, and uses 50% less energy over traditional methods.
- **Results:**
 - City saved \$54,000 in avoided energy costs

Traffic Signal Retrofit

- **Description:**
 - All the City's traffic signals were replaced with LED lighting
- **Results:**
 - 83% decrease in use in electricity since 2005
 - 4% decrease in use in electricity since 2012

City Market Lighting Retrofit

- **Description:**
 - Replacement of halogen and incandescent with CFL bulbs at the City Market
 - 282 high pressure sodium lights were retrofitted with LED lights in the garage
- **Results:**
 - Lighting expenses were reduced by 69% at the Market between 2006 and 2010.
 - 2% decrease in electrical use between 2014 and 2015 and 39% decrease overall in the garage

Municipal North and South- Retrofit

- **Description:**
 - T-12 bulbs replaced with T-8 bulbs
 - HVAC overhaul and upgrade

- **Results:**
 - 45% energy improvement from 2006 to 2010
 - 19% increase in gas and electric energy use
- **Future Plans:**
 - Ongoing regular operations and maintenance
 - Data center energy upgrade with improved back-up generator
 - New HVAC
 - Individual monitoring
 - Improved ventilation

Signal Coordination

- **Description:**
 - All city traffic signals were assessed for maximum efficiency and then reconfigured to improve traffic flow.
- **Results:**
 - Traffic light timing improved over 9 miles
 - Peak traffic travel time improved by 11%
 - Delays reduced by 20%
 - Stops reduced by 15%
 - 10% reduction in fuel consumption

Reforestation of Roanoke

- **Description:**
 - Planted 100 trees more than the tree losses per year
 - Reforested 3 acres of Thrasher Park
 - Preserved mature trees through regular maintenance
 - Planted trees and shrubs and removed asphalt along the Roanoke River

5% Biodiesel Mix

- **Description:**
 - All diesel vehicles use a 5% biodiesel mix
 - Higher grade filters installed to keep engines clean
- **Results:**
 - 8% reduction in consumption of diesel in 2012

Single Stream Recycling Program

- **Description:**
 - Introduced single stream curbside recycling that accepts mixed paper, cardboard, newspaper, certain colored glass, and plastics 1-7.
 - Recycling offered at all city venues and city facilities
 - Promotes use of Household Hazardous Waste program to city residents

- **Results:**
 - 15% increase in solid waste recycling between 2014 and 2015
 - 149,420 ton reduction GHG emissions between 2005 and 2010
- **Future Plans:**
 - Double collection rates by continuing to increase participation

Municipal Building Green Roof

- **Description:**
 - A green roof with over 14 species of sedum was installed at the entrance of the Noel Taylor Municipal Building and educational signage was posted.
 - A rainwater harvesting system was installed to harvest rainwater runoff from the upper roof and excess from the green roof. The water is then used to water the plants via an automated irrigation system that determines the watering needs of the plants.
- **Results:**
 - The roof is expected to capture 44% of run-off, reduce heat island effect, improve water quality of the remaining run-off, and reduce noise to the employees that work below the roof

Tire Maintenance

- **Description:**
 - Fill city vehicle tires with nitrogen as opposed to compress air
 - Good condition tires are sent to be re-capped and re-used and tires in poor condition are recycled
- **Results:**
 - Nitrogen filled tires have already saved the City roughly 400 tires

Clean and Green Community Campaign

- **Description:**
 - A campaign developed directly from the ICLEI commitment for the city to reduce GHG 10% in 5 years, with a 12.5% reduction for the local government entity of the City of Roanoke.
 - The Citizens for Clean and Green, a volunteer task force, promotes going green to residential citizens through actions such as the Green Academy with classes and presentations.
 - The Clean and Green Business Coalition was created from the top 12 employers in the City of Roanoke who agreed to reduce their carbon footprint by 20% in 5 years. The coalition meets for lunch up to three times per year to discuss corporate sustainability, successes and challenges, and opportunities for support
- **Results:**
 - Clean and Green Business Coalition 5 year goal reached in two years
 - Over 80,000 tons of GHG avoided

Rainwater Harvesting

- **Description:**
 - Two new fire stations were constructed with pervious parking surfaces and run-off harvesting systems. The rainwater is used to clean the vehicles and maintain the property.

Other Future Commitments:

- Plan to install a slow drip compressed natural gas station at the Public Works Service Center. The Fleet Management of the City is preparing their facility and fleet for conversion.
- Begin installation and use of solar energy.